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U.S. Department of Justice
Office of Justice Programs
National Institute of Justice

National Institute of Justice

Law Enforcement and Corrections Standards and Testing Program

Guide for the Selection of Communication Equipment for Emergency First Responders

NIJ Guide 104–00

Volume II

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ABOUT THE LAW ENFORCEMENT AND CORRECTIONS STANDARDS AND TESTING PROGRAM

The Law Enforcement and Corrections Standards and Testing Program is sponsored by the Office of Science and Technology of the National Institute of Justice (NIJ), U.S. Department of Justice. The program responds to the mandate of the Justice System Improvement Act of 1979, which directed NIJ to encourage research and development to improve the criminal justice system and to disseminate the results to Federal, State, and local agencies.

The Law Enforcement and Corrections Standards and Testing Program is an applied research effort that determines the technological needs of justice system agencies, sets minimum performance standards for specific devices, tests commercially available equipment against those standards, and disseminates the standards and the test results to criminal justice agencies nationally and internationally.

The program operates through:

The *Law Enforcement and Corrections Technology Advisory Council* (LECTAC), consisting of nationally recognized criminal justice practitioners from Federal, State, and local agencies, which assesses technological needs and sets priorities for research programs and items to be evaluated and tested.

The *Office of Law Enforcement Standards* (OLES) at the National Institute of Standards and Technology, which develops voluntary national performance standards for compliance testing to ensure that individual items of equipment are suitable for use by criminal justice agencies. The standards are based upon laboratory testing and evaluation of representative samples of each item of equipment to determine the key attributes, develop test methods, and establish minimum performance requirements for each essential attribute. In addition to the highly technical standards, OLES also produces technical reports and user guidelines that explain in nontechnical terms the capabilities of available equipment.

The *National Law Enforcement and Corrections Technology Center (NLECTC),* operated by a grantee, which supervises a national compliance testing program conducted by independent laboratories. The standards developed by OLES serve as performance benchmarks against which commercial equipment is measured. The facilities, personnel, and testing capabilities of the independent laboratories are evaluated by OLES prior to testing each item of equipment, and OLES helps the NLECTC staff review and analyze data. Test results are published in Equipment Performance Reports designed to help justice system procurement officials make informed purchasing decisions.

Publications are available at no charge through the National Law Enforcement and Corrections Technology Center. Some documents are also available online through the Internet/World Wide Web. To request a document or additional information, call 800–248–2742 or 301–519–5060, or write:

National Law Enforcement and Corrections Technology Center
P.O. Box 1160
Rockville, MD 20849–1160
E-Mail: *asknlectc@nlectc.org*
World Wide Web address: *http://www.nlectc.org*

The National Institute of Justice is a component of the Office of Justice Programs, which also includes the Bureau of Justice Assistance, the Bureau of Justice Statistics, the Office of Juvenile Justice and Delinquency Prevention, and the Office for Victims of Crime.

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Guide for the Selection of Communication Equipment for Emergency First Responders

NIJ Guide 104–00, Volume II

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NCJ ######

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National Institute of Justice

Sarah V. Hart
Director

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Dr. David G. Boyd, Director,
Office of Science and Technology.

FOREWORD

The Office of Law Enforcement Standards (OLES) of the National Institute of Standards and Technology (NIST) furnishes technical support to the National Institute of Justice (NIJ) program to support law enforcement and criminal justice in the United States. OLES's function is to develop standards and conduct research that will assist law enforcement and criminal justice agencies in the selection and procurement of quality equipment.

OLES is: (1) subjecting existing equipment to laboratory testing and evaluation, and (2) conducting research leading to the development of several series of documents, including national standards, user guides, and technical reports.

This document covers research conducted by OLES under the sponsorship of NIJ. Additional reports as well as other documents are being issued under the OLES program in the areas of protective clothing and equipment, communication systems, emergency equipment, investigative aids, security systems, vehicles, weapons, and analytical techniques and standard reference materials used by the forensic community.

Technical comments and suggestions concerning this guide are invited from all interested parties. They may be addressed to the Office of Law Enforcement Standards, National Institute of Standards and Technology, 100 Bureau Drive, Stop 8102, Gaithersburg, MD 20899–8102.

Sarah V. Hart, Director
National Institute of Justice

ACKNOWLEDGMENTS

The authors wish to thank Ms. Kathleen Higgins of the National Institute of Standards and Technology (NIST) for programmatic support and for numerous valuable discussions concerning the contents of this document. Mr. Bill Haskell of SBCCOM, Ms. Priscilla S. Golden of General Physics, and Mr. Todd Brethauer representing the Technical Support Working Group (TSWG)[3] also reviewed the document and provided numerous useful comments.

We wish to acknowledge the Interagency Board (IAB) for Equipment Standardization and Interoperability. The IAB (made up of government and first responder representatives) was commissioned by the Attorney General of the United States, in conjunction with the Director of Military Support of the Department of Defense. The IAB was established to ensure equipment standardization and interoperability and to oversee the research and development of advanced technologies to assist first responders at the state and local levels in establishing and maintaining a robust crisis and consequence management capability.[4]

We also sincerely thank all vendors who provided us with information about their products.

[3]The Technical Support Working Group (TSWG) is the U.S. national forum that identifies, prioritizes, and coordinates interagency and international research and development (R&D) requirements for combating terrorism. Through the Department of Defense's Combating Terrorism Technology Support Program and funding provided by other agencies, the TSWG rapidly develops technologies and equipment to meet the high-priority needs of the combating terrorism community, and addresses joint international operational requirements through cooperative R&D with major allies.

[4]The Marshall Convention, Standardized Weapons of Mass Destruction (WMD) Response Force Equipment and InterOperability, 2 to 4 November 1999.

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Commonly Used Symbols and Abbreviations

A	ampere	h	hour	oz	ounce
ac	alternating current	hf	high frequency	o.d.	outside diameter
AM	amplitude modulation	Hz	hertz	Ω	ohm
cd	candela	i.d.	inside diameter	p.	page
cm	centimeter	in	inch	Pa	pascal
CP	chemically pure	IR	infrared	pe	probable error
c/s	cycle per second	J	joule	pp.	pages
d	day	L	lambert	ppm	parts per million
dB	decibel	L	liter	qt	quart
dc	direct current	lb	pound	rad	radian
°C	degree Celsius	lbf	pound-force	rh	relative humidity
°F	degree Fahrenheit	lbf·in	pound-force inch	s	second
dia	diameter	lm	lumen	SD	standard deviation
emf	electromotive force	ln	logarithm (base e)	sec.	Section
eq	equation	log	logarithm (base 10)	SWR	standing wave ratio
F	farad	M	molar	uhf	ultrahigh frequency
fc	footcandle	m	meter	UV	ultraviolet
fig.	Figure	μ	micron	V	volt
FM	frequency modulation	min	minute	vhf	very high frequency
ft	foot	mm	millimeter	W	watt
ft/s	foot per second	mph	miles per hour	N	newton
g	acceleration	m/s	meter per second	λ	wavelength
g	gram	mo	month	wk	week
gal	gallon	N·m	newton meter	wt	weight
gr	grain	nm	nanometer	yr	year
H	henry	No.	number		

area=unit^2 (e.g., ft^2, in^2, etc.); volume=unit^3 (e.g., ft^3, m^3, etc.)

ACRONYMS SPECIFIC TO THIS DOCUMENT

APCO	Association of Public Safety Communications Officials	NiMH	Nickel Metal Hydride
CB	Citizens Band	PCS	Personal Communication System
EDACS	Enhanced Digital Access Communications Systems	PMR	Private Mobile Radio
GHz	Gigahertz	PTT	Push-to-Talk
I.S.	Intrinsically Safe	RF	Radio Frequency
LMR	Land Mobile Radios	SMR	Shared Mobile Radio
LTR	Logic Trunked Radio	TETRA	Terrestrial Trunked Radio
MHz	Megahertz	VOX	Voice Operated Switch
NiCad	Nickel Cadmium		

DEFINITIONS SPECIFIC TO THIS DOCUMENT

CDMA	Code Division Multiple Access is a method of subdividing a band to permit access to the same frequency for multiple users.
TMDA	Time Division Multiple Access is a method of subdividing a band to permit access to the same frequency for multiple users.
ISM Bands	Nonlicensed/nonexclusive frequency bands for Industrial, Scientific, and Medical applications. Frequency bands (902 MHz to 928 MHz, 2.40 GHz to 2.483 GHz) set aside for low-power devices (also referred to as “Part 15” devices).
DSSS	Direct Sequence and Spread Spectrum (an RF transmission scheme to permit multiple, coordinated users to operate in the same band).
FHSS	Frequency Hopping and Spread Spectrum (an RF transmission scheme to permit multiple, coordinated users to operate in the same band).
Duplex	Real or perceived simultaneous transmit and receive.
Half-duplex	Continuous receive of all transmitted information and a transmit frequency/time slot/code shared with others.

PREFIXES
(See ASTM E380)

d	deci (10^{-1})	da	deka (10)
c	centi (10^{-2})	h	hecto (10^{2})
m	milli (10^{-3})	k	kilo (10^{3})
µ	micro (10^{-6})	M	mega (10^{6})
n	nano (10^{-9})	G	giga (10^{9})
p	pico (10^{-12})	T	tera (10^{12})

COMMON CONVERSIONS

0.30480 m = 1 ft	4.448222 N = 1 lbf
2.54 cm = 1 in	1.355818 J = 1 ft·lbf
0.4535924 kg = 1 lb	0.1129848 N m = 1 lbf·in
0.06479891g = 1gr	14.59390 N/m = 1 lbf/ft
0.9463529 L = 1 qt	6894.757 Pa = 1 lbf/in^2
3600000 J = 1 kW·hr	1.609344 km/h = 1 mph

psi = mm of Hg x (1.9339×10^{-2})
mm of Hg = psi x 51.71

Temperature: $T\,{}^{\circ}_{C} = (T\,{}^{\circ}_{F} - 32) \times 5/9$

Temperature: $T\,{}^{\circ}_{F} = (T\,{}^{\circ}_{C} \times 9/5) + 32$

EXECUTIVE SUMMARY

The National Institute of Justice is the focal point for providing support to State and local law enforcement agencies in the development of counterterrorism technology and standards, including technological needs for chemical and biological defense. In recognizing the needs of State and local emergency first responders, the Office of Law Enforcement Standards (OLES) at the National Institute of Standards and Technology (NIST), supported by the National Institute of Justice (NIJ), the Technical Support Working Group (TSWG), the U.S. Army Soldier and Biological Chemical Command, and the Interagency Board for Equipment Standardization and Interoperability (IAB), is developing chemical and biological defense equipment guides. These guides will focus on chemical and biological equipment in areas of detection, personal protection, decontamination, and communication. This guide focuses specifically on communication equipment and was developed to assist the emergency first responder community in the evaluation and purchase of communication equipment that can be used in conjunction with chemical and biological protective clothing and respiratory equipment.

The long range plans include these goals: (1) subject existing communication equipment to laboratory testing and evaluation against a specified protocol, and (2) conduct research leading to the development of a series of documents, including national standards, user guides, and technical reports. It is anticipated that the testing, evaluation, and research processes will take several years to complete; therefore, the National Institute of Justice has developed this initial guide for the emergency first responder community to facilitate their evaluation and purchase of communication equipment.

In conjunction with this program, additional guides, as well as other documents, are being issued in the areas of chemical agent and toxic industrial material detection equipment, biological agent detection equipment, decontamination equipment, and personal protective equipment.

This specific work is Volume II of the *Guide for the Selection of Communication Equipment for Emergency First Responders*. It contains the information data sheets that were used to support the communication equipment evaluation detailed in Volume I. The compilation of data in Volume II is the result of the merger of several data acquisition methods used independently by NIST and TSWG.

The information contained in this guide has been obtained primarily through literature searches and market surveys. The vendors were contacted during the preparation of this guide to ensure data accuracy. In addition, the information contains test data obtained from other sources (e.g., Department of Defense) if available. It should be noted that the purpose of this guide is not to make recommendations about which equipment should be purchased, but to provide to the reader with information available from vendors so commercially available equipment can be compared and contrasted. *Reference herein to any specific commercial products, processes, or services by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government. The information and statements contained in this guide shall not be used for the purposes of advertising, nor to imply the endorsement or recommendation of the United States Government.*

With respect to information provided in this guide, neither the United States Government nor any of its employees make any warranty, expressed or implied, including but not limited to the warranties of merchantability and fitness for a particular purpose. Further, neither the United States Government nor any of its employees assume any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product or process disclosed.

Technical comments, suggestions, and product updates are encouraged from interested parties. They may be addressed to the Office of Law Enforcement Standards, National Institute of Standards and Technology, 100 Bureau Drive, Stop 8102, Gaithersburg, MD 20899–8102. It is anticipated that this guide will be updated periodically.

Questions relating to the specific devices included in this document should be addressed directly to the proponent agencies or the equipment manufacturers. Contact information for each equipment item included in this guide can be found in this volume (vol. II).

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GUIDE FOR THE SELECTION OF COMMUNICATION EQUIPMENT FOR EMERGENCY FIRST RESPONDERS

This guide includes information that is intended to assist the emergency first responder community in the selection of communication equipment for different applications. This specific work, Volume II of the *Guide for the Selection of Communication Equipment for Emergency First Responders*, includes manufacturer-supplied details on the 181 communication equipment items that are referenced in Volume I.

1. INTRODUCTION

The *Guide for the Selection of Communication Equipment for Emergency First Responders* includes information intended to be useful to the emergency first responder community in the selection of communication equipment that can be used in conjunction with chemical and biological protective clothing and respiratory equipment. Due to the large number of communication equipment items (radios) identified for the guide, the guide is separated into two volumes. Volume I serves as the selection tool while Volume II serves as a repository for the communication equipment data sheets.

This specific work represents Volume II of the *Guide for the Selection of Communication Equipment for Emergency First Responders*. Volume II includes three sections and five appendices. Section 1 is the introduction. Section 2 discusses the market survey (preliminary work) that was conducted to identify the 181 commercially available communication equipment items. Section 3 provides a description of the 43 data fields that were identified for providing information relating to the equipment. Appendix A lists the references that were used in developing this document. Appendix B sequentially indexes the communication equipment by detector identification number and includes the manufacturers. Appendix C alphabetically indexes the communication equipment by the equipment names. Appendix D alphabetically indexes the communication equipment by the manufacturer names. Appendix E contains the data sheets for each item of communication equipment.

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2. IDENTIFICATION OF COMMUNICATION EQUIPMENT

An extensive market survey was conducted to identify commercially available communication equipment. This market survey included the identification of new equipment and interaction with numerous equipment vendors. Section 2.1 provides the identification of new equipment, and section 2.2 provides a summary of information obtained through interfacing with the vendors.

2.1 Identification of New Equipment

A variety of sources were utilized to identify commercially available communication equipment, including a Commerce Business Daily (CBD) Announcement, literature searches, database searches, Internet searches, technical conferences, technical contacts, and amateur radio hobbyists. These techniques resulted in the identification of 181 communication equipment items.

2.2 Vendor Contact

Vendors were contacted to obtain additional product information, as well as to finalize their specific equipment data for inclusion in the guide. An initial contact occurred in June 2000, asking for detailed information from manufacturers and vendors. Each vendor received a facsimile or an electronic mail message that contained the data sheets for their specific equipment item(s) and the definitions that were used to populate the data sheets. The vendors were given three weeks to review the information.

A second contact was made during October 2000. Each vendor again received a facsimile or an electronic mail message that contained the data sheets for their specific equipment item(s), the selection factors that were developed to assist with the selection and purchase of the most appropriate equipment, and the results of the evaluation of the communication equipment against the selection factors. The vendors were asked to review the data sheets and tables for completeness and accuracy of the incorporated data.

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3. DATA FIELDS

Appendix E serves as a compendium of commercially available communication equipment. Each of the identified 181 communication equipment items is detailed within appendix E. Forty-three data fields, as defined in this section, were used for providing information relating to the communication equipment. It is important to note that these data fields were developed using input from the emergency responder community.

The data fields are organized into six categories:

- General.
- Operational parameters.
- Physical parameters.
- Available accessories.
- Logistical parameters.
- Special requirements.

The remainder of this section defines each of the 43 data fields by category.

3.1 General Category

The General Category includes the following 12 data fields:

1. Equipment name.
2. ID #.
3. Model number(s).
4. Technology.
5. Secure communication capability.
6. Availability.
7. Frequency range.
8. Number of personnel supported by system.
9. Geographic coverage.
10. Current user(s).
11. Manufacturer.
12. Source.

Each of these data fields is defined in more detail in the remainder of this section.

3.1.1 Name

The Name data field is used to identify the name of the equipment.

3.1.2 ID

The ID # data field is for identification purposes only.

3.1.3 Model Number(s)

The Model Number(s) data field includes the model identification number for the piece of equipment.

3.1.4 Technology

The Technology data field identifies whether the unit is part of a conventional, trunked, or hard-wired radio system.

3.1.5 Secure Communication Capability

The Secure Communication Capability data field identifies whether an encryption module is available to prevent sensitive radio traffic from being monitored by the media or general public.

3.1.6 Availability

Availability refers to how readily available a piece of equipment is (e.g., how long it takes to receive equipment upon purchasing) or the availability status of the equipment (e.g., commercial availability).

3.1.7 Frequency Range

The Frequency Range data field identifies the public service band used (not applicable to hard wire systems).

3.1.8 Number of Personnel Supported by System

The Number of Personnel Supported by System data field indicates the number of people that can use the system.

3.1.9 Geographic Coverage

The Geographic Coverage data field identifies how large an area can be covered by the system (square miles for radio, linear feet for hard line). Line of sight (the distance that transmission can occur in a clear area with no repeater) is an important consideration for this data field.

3.1.10 Current User(s)

The Current User data field is used to identify organizations that are currently using the equipment/radio system, and the number of organizations using equipment/radio system in North America.

3.1.11 Manufacturer

The Manufacturer data field contains the name of the company that developed the piece of equipment and includes the address, telephone number, and point of contact (POC).

3.1.12 Source

The Source data field indicates where the equipment information was obtained. Potential sources include past market surveys and Internet Web sites.

3.2 Operational Parameters Category

The Operational Parameters Category includes the following four data fields:

1. Number of channels.
2. Transmitter power output levels.
3. Battery options.
4. Battery recharging options.

Each of these data fields is defined in more detail in the remainder of this section.

3.2.1 Number of Channels

The Number of Channels data field indicates the maximum number of channels on which a unit can be programmed to operate.

3.2.2 Transmitter Output Power Levels

The Transmitter Output Power Levels data field specifies the number and magnitude of discreet transmitter power output levels.

This selection factor rates the transmitter power output. For portable radios, too high an output power leads to a shortened battery use cycle before the battery needs to be changed or recharged. Too low an output can put the life of the responder in jeopardy, as the signal may not be able to be picked up by the repeater or other receiver. This does not apply to mobile radios or repeaters, however, because they have a higher output and an external power source.

3.2.3 Battery Options

The Battery Options data field identifies the types of batteries that are available for the unit. Some examples are NiCad, NiMH, and alkaline batteries.

3.2.4 Battery Recharging Options

The Battery Recharging Options data field identifies whether such options as individual chargers, bank charging stations, rapid charging stations, or vehicular charging are available for the unit.

3.3 Physical Parameters Category

The Physical Parameters Category includes the following four data fields:

1. Size.
2. Weight.
3. Power requirements.
4. External power.

Each of these data fields is defined in more detail in the remainder of this section.

3.3.1 Size

The Size data field provides the external dimensions of the equipment.

3.3.2 Weight

The Weight data field indicates the total weight of the equipment (radio and battery).

3.3.3 Power Requirements

The Power Requirements data field refers to the battery voltage and current drain of the equipment.

3.3.4 External Power

The External Power data field indicates whether there is a jack for external power or if a battery eliminator is used.

3.4 Available Accessories

The Available Accessories category includes the following four data fields:

1. Speaker-microphone.
2. Carrying case.
3. Battery eliminators.
4. Vehicle adapters.

Each of these data fields is defined in more detail in the remainder of this section.

3.4.1 Speaker-Microphone

The Speaker-Microphone data field indicates types of speaker-microphones available, such as conventional, separate ear canal speaker-throat microphone combination, ear canal speaker-microphone, separate ear canal speaker-lapel microphone, voice-activated talk switch, remote switch, etc. This field also specifies whether the speaker-microphones have a screw-in connection or plug-in connection.

3.4.2 Carrying Case

The Carrying Case data field identifies the types of carries that are available, such as belt loop and suspender pouch carriers.

3.4.3 Battery Eliminator

The Battery Eliminator data field indicates whether the manufacturer has battery eliminators available or if they must be obtained from a third party manufacturer.

3.4.4 Vehicular Adapter

The Vehicular Adapter data field indicates whether vehicular adapters are available that allow units to be used with an external antenna, an external power, etc., while charging the unit's battery.

3.5 Logistical Parameters Category

The Logistical Parameters Category includes the following 10 data fields:

1. Programming.
2. Repairs.
3. Decontamination.
4. Durability/ruggedness.
5. Environmental conditions.
6. Unit cost.
7. Battery cycle life.
8. Rapid charge battery cycle life.
9. Maintenance cost.
10. Interface capability.

Each of these data fields is defined in more detail in the remainder of this section.

3.5.1 Programming

The Programming data field indicates if the individual radios are programmed at a service facility and whether they can be field and user-programmed.

3.5.2 Repairs

The Repairs data field indicates if the radios can be repaired at the local dealer and/or service facility or if they must be returned to a national service depot.

3.5.3 Decontamination

The Decontamination data field identifies the process, such as thermal, chemical, or physical, by which the communication equipment can be decontaminated.

3.5.4 Durability/Ruggedness

The Durability/Ruggedness data field describes how rugged the equipment is (i.e., how well the equipment can take brutally rough handling and still operate) and indicates if ruggedness data can be shown.

3.5.5 Environmental Conditions

The Environmental Conditions data field specifies the temperature and humidity range that the equipment is designed to operate in without compromising the efficiency or effectiveness of the radio. This field also indicates if ruggedized versions of the equipment are available for inclement weather or extreme conditions.

3.5.6 Unit Cost

The Unit Cost data field is the cost of the equipment, including all consumables and support equipment.

This selection factor rates the unit cost of the radio equipment. This factor, in conjunction with other selection factors, can help decide if a radio will be deemed suitable for disposal after use, suitable for special uses only, or suitable for all uses.

3.5.7 Battery Cycle Life

The Battery Cycle Life data field refers to how many normal charge/discharge cycles the batteries are rated for.

3.5.8 Rapid Charge Battery Cycle Life

The Rapid Charge Battery Cycle Life refers to how many rapid charge/discharge cycles the batteries are rated for.

3.5.9 Maintenance Cost

The Maintenance Cost is the cost to maintain and operate the equipment. This cost will be based on equipment usage rates.

3.5.10 Interface Capability

The Interface Capability data field indicates whether the communication equipment has the ability to interface with personal protection, communication, or decontamination equipment. This includes network capability, hard wire capability, RF communication, etc.

3.6 Special Requirements Category

The Special Requirements Category includes the following nine data fields:

1. Operator skills required.
2. Operator training required.
3. Training available.
4. Manuals available.
5. Applicable regulations.
6. Support equipment.
7. Warranty.
8. Mil Spec/Mil-Std ratings.
9. Intrinsically safe.

Each of these data fields is defined in more detail in the remainder of this section.

3.6.1 Operator Skills Required

The Operator Skills Required data field describes the educational level training necessary to execute the required basic maintenance activities, such as changing batteries and radio programming.

3.6.2 Operator Training Requirements

The Operator Training Requirements data field refers to the amount of time required for the operator to become proficient in using the radio equipment.

3.6.3 Training Available

The Training Available data field indicates if there is training available from the manufacturer.

3.6.4 Manuals Available

The Manuals Available data field describes the type of manuals available from the manufacturer; for example, a user manual or a service manual.

3.6.5 Applicable Regulations

The Applicable Regulations data field refers to government and/or safety regulations that may apply to the RF exposure of first responders.

3.6.6 Support Equipment

The Support Equipment data field lists additional equipment required to operate the chosen units/system. This may include computers, programming interfaces, and programming cables.

3.6.7 Warranty

The Warranty data field refers to how long a piece of equipment would be guaranteed by the manufacturer.

3.6.8 Mil Spec/Mil-Std Ratings

The Mil Spec/Mil-Std data field indicates if the equipment meets Mil Spec C, D, and E requirements, if it meets the requirements for driving in the rain, and if it meets any additional Mil Spec Ratings.

3.6.9 Intrinsically Safe

The Intrinsically Safe data field indicates if the equipment has been certified intrinsically safe by Factory Mutual, or if a version of the equipment is available with this rating.

APPENDIX A—REFERENCES

APPENDIX A—REFERENCES

1. Andy Ibbetson, *Domestic Preparedness Program in Defense of Weapons of Mass Destruction Report on Communication Equipment*, CON-SPACE Communication Inc., October 26, 1999.

APPENDIX B—INDEX BY COMMUNICATION EQUIPMENT IDENTIFICATION NUMBER

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56	Kenwood Synthesized FM Portable Radio; TK-270/G	Kenwood Communications Corp., Long Beach, California	111
57	Kenwood Synthesized FM Portable Radio; TK-360/G	Kenwood Communications Corp., Long Beach, California	113
58	Kenwood Synthesized FM Portable Radio; TK-370/G	Kenwood Communications Corp., Long Beach, California	115
59	Kenwood Compact Synthesized FM Mobile Radio; TK-760G	Kenwood Communications Corp., Long Beach, California	117
60	Kenwood Compact Synthesized FM Mobile Radio; TK-860G	Kenwood Communications Corp., Long Beach, California	119
61	Kenwood Compact Synthesized FM Mobile Radio; TK-762G	Kenwood Communications Corp., Long Beach, California	121
62	Kenwood Compact Synthesized FM Mobile Radio; TK-862G	Kenwood Communications Corp., Long Beach, California	123
63	Kenwood Compact Synthesized FM Mobile Radio; TK-760H	Kenwood Communications Corp., Long Beach, California	125
64	Kenwood Compact Synthesized FM Mobile Radio; TK-860H	Kenwood Communications Corp., Long Beach, California	127
65	Kenwood Compact Synthesized FM Mobile Radio; TK-762H	Kenwood Communications Corp., Long Beach, California	129
66	Kenwood Compact Synthesized FM Mobile Radio; TK-862H	Kenwood Communications Corp., Long Beach, California	131
67	Kenwood Public Safety Mobile FM Radios; TK-690H	Kenwood Communications Corp., Long Beach, California	133
68	Kenwood Public Safety Mobile FM Radios; TK-790	Kenwood Communications Corp., Long Beach, California	135

69	Kenwood Public Safety Mobile FM Radios; TK-790H	Kenwood Communications Corp., Long Beach, California	137
70	Kenwood Public Safety Mobile FM Radios; TK-890	Kenwood Communications Corp., Long Beach, California	139
71	Kenwood Public Safety Mobile FM Radios; TK-890H	Kenwood Communications Corp., Long Beach, California	141
72	Kenwood VHF/UHF Mobile Radio; TK-780	Kenwood Communications Corp., Long Beach, California	143
73	Kenwood VHF/UHF Mobile Radio; TK-880	Kenwood Communications Corp., Long Beach, California	145
74	Kenwood Transceiver, Portable; TK-2100	Kenwood Communications Corp., Long Beach, California	147
75	Kenwood Transceiver, Portable; TK-3100	Kenwood Communications Corp., Long Beach, California	149
76	Kenwood Transceiver, Portable; TK-3101	Kenwood Communications Corp., Long Beach, California	151
77	Kenwood VHF Fm Transceivers; TK-290	Kenwood Communications Corp., Long Beach, California	153
78	Kenwood UHF Fm Transceivers; TK-390	Kenwood Communications Corp., Long Beach, California	155
79	Kenwood Trunked Mobile Radio; TK-980 NSPAC	Kenwood Communications Corp., Long Beach, California	157
80	Kenwood Synthesized FM Portable Radio/Trunked System; TK-280	Kenwood Communications Corp., Long Beach, California	159
81	Kenwood Synthesized FM Portable Radio/Trunked System; TK-380	Kenwood Communications Corp., Long Beach, California	161
82	Kenwood 800/900 MHz FM Transceiver; TK-480 and TK-480 NPSPAC	Kenwood Communications Corp., Long Beach, California	163
83	Kenwood 800/900 MHz FM Transceiver; TK-481	Kenwood Communications Corp., Long Beach, California	165
84	Kenwood Trunked Portable Radios; TK-930HDK2 NSPAC	Kenwood Communications Corp., Long Beach, California	167
85	Kenwood Trunked Compact Mobile Radio; TK-980	Kenwood Communications Corp., Long Beach, California	169
86	Kenwood Trunked Compact Mobile Radio; TK-981	Kenwood Communications Corp., Long Beach, California	171

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141	Maxon VHF/UHF Transceiver, Portable; SP-120	Topaz 3, LLC, Kansas City, Missouri	281
142	Maxon VHF/UHF Transceiver, Portable; SP-130/SP-140	Topaz 3, LLC, Kansas City, Missouri	283
143	Maxon VHF/UHF Transceiver, Portable; SP-200	Topaz 3, LLC, Kansas City, Missouri	285
144	Maxon VHF/UHF Transceiver, Portable; SP-300	Topaz 3, LLC, Kansas City, Missouri	287
145	Maxon UHF Transceiver, Portable; SP-150U	Topaz 3, LLC, Kansas City, Missouri	289
146	Vertex Dual Band (VHF & UHF) Transceiver, Portable; FTH-2070	Yaesu/Vertex-Standard, Cerritos, California	291
147	Vertex FTL Series; FTL-1011 (VHF LowBand)	Yaesu/Vertex-Standard, Cerritos, California	293
148	Vertex FTL Series; FTL-1011H (VHF LowBand HiPower)	Yaesu/Vertex-Standard, Cerritos, California	295
149	Vertex FTL Series; FTL-2011 (VHF Highband)	Yaesu/Vertex-Standard, Cerritos, California	297
150	Vertex FTL Series; FTL-7011 (UHF)	Yaesu/Vertex-Standard, Cerritos, California	299
151	Vertex GX4800UT Mobile Transceiver	Yaesu/Vertex-Standard, Cerritos, California	301
152	Vertex VX Series; VX-10V (VHF Model)	Yaesu/Vertex-Standard,	303
153	Vertex VX Series; VX-10U (UHF Model)	Yaesu/Vertex-Standard, Cerritos, California	305
154	Vertex VX Series; VX-300	Yaesu/Vertex-Standard, Cerritos, California	307
155	Vertex HX Series; HX120 UHF Portable	Yaesu/Vertex-Standard,	309
156	Vertex HX Series; HX120 VHF Portable	Yaesu/Vertex-Standard,	311
157	Vertex HX Series; HX140 VHF Portable	Yaesu/Vertex-Standard, Cerritos, California	313

158	Vertex HX Series; HX381 VHF Portable	Yaesu/Vertex-Standard, Cerritos, California	315
159	Vertex HX Series; HX381 UHF Portable	Yaesu/Vertex-Standard, Cerritos, California	317
160	Vertex HX Series; HX240 VHF Portable	Yaesu/Vertex-Standard, Cerritos, California	319
161	Vertex HX Series; HX240 UHF Portable	Yaesu/Vertex-Standard, Cerritos, California	321
162	Vertex HX Series; HX482UT UHF Portable	Yaesu/Vertex-Standard, Cerritos, California	323
163	Vertex HX Series; HX580 Dual Protocol Hand Held	Yaesu/Vertex-Standard, Cerritos, California	324
164	Vertex VX Series; VX-210V (VHF Model)	Yaesu/Vertex-Standard, Cerritos, California	327
165	Vertex VX Series; VX-210U (UHF Model)	Yaesu/Vertex-Standard, Cerritos, California	329
166	Vertex VX Series; VX-400V (VHF Model)	Yaesu/Vertex-Standard, Cerritos, California	331
167	Vertex VX Series; VX-400U (UHF Model)	Yaesu/Vertex-Standard, Cerritos, California	333
168	Vertex VX Series; VX-500	Yaesu/Vertex-Standard, Cerritos, California	335
169	Vertex VX Series; VX-510LX (Low Band VHF)	Yaesu/Vertex-Standard, Cerritos, California	337
170	Vertex VX Series; VX-510V (VHF Model)	Yaesu/Vertex-Standard, Cerritos, California	339
171	Vertex VX Series; VX-510U (UHF Model)	Yaesu/Vertex-Standard, Cerritos, California	341
172	Vertex VX Series; VX-2000V Mobile Radio (VHF)	Yaesu/Vertex-Standard, Cerritos, California	343
173	Vertex VX Series; VX-2000U Mobile Radio (UHF)	Yaesu/Vertex-Standard, Cerritos, California	345
174	Vertex VX Series; VX-3000L (VHF Lowband)	Yaesu/Vertex-Standard, Cerritos, California	347
175	Vertex VX Series; VX-3000V (VHF)	Yaesu/Vertex-Standard, Cerritos, California	349

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176	Vertex VX Series; VX-3000U (UHF)	Yaesu/Vertex-Standard, Cerritos, California	351
177	Vertex Repeaters; VXR-1000 (VHF)	Yaesu/Vertex-Standard, Cerritos, California	353
178	Vertex Repeaters; VXR-1000 (UHF)	Yaesu/Vertex-Standard, Cerritos, California	355
179	Vertex Repeaters; VXR-5000 (VHF)	Yaesu/Vertex-Standard, Cerritos, California	357
180	Vertex Repeaters or Base Station; VXR-5000 (UHF)	Yaesu/Vertex-Standard, Cerritos, California	359
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Index by Communication Equipment Name

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ComNet Ericsson EDACS™ LPE-200™ Portable 800 MHz, 900 MHz	Com-Net Ericsson Critical Radio Systems, Inc., Lynchburg, Virginia	5	9
ComNet Ericsson EDACS™ M-RK™ Aegis™ Portable VHF, UHF, 800 MHz	Com-Net Ericsson Critical Radio Systems, Inc., Lynchburg, Virginia	6	11
ComNet Ericsson EDACS™ M-RK™ Aegis™ Portable VHF, UHF, 800 MHz	Com-Net Ericsson Critical Radio Systems, Inc., Lynchburg, Virginia	7	13
ComNet Ericsson EDACS™ M-RK™ Aegis™ SCAN Portable VHF, UHF, 800 MHz	Com-Net Ericsson Critical Radio Systems, Inc., Lynchburg, Virginia	8	15
ComNet Ericsson Jaguar Transceiver, Portable; Jaguar 700P, 800 MHz	Com-Net Ericsson Critical Radio Systems, Inc., Lynchburg, Virginia	10	19
ComNet Ericsson M-RK™ Analog Portable, M-RK I	Com-Net Ericsson Critical Radio Systems, Inc., Lynchburg, Virginia	11	21
ComNet Ericsson M-RK™ Analog Portable, M-RK II Scan	Com-Net Ericsson Critical Radio Systems, Inc., Lynchburg, Virginia	13	25
ComNet Ericsson Orion Mobile Radio	Com-Net Ericsson Critical Radio Systems, Inc., Lynchburg, Virginia	15	29
ComNet Ericsson Panther Transceiver, Mobile Panther 400M	Com-Net Ericsson Critical Radio Systems, Inc., Lynchburg, Virginia	17	33
ComNet Ericsson Panther Transceiver, Mobile Panther 600M	Com-Net Ericsson Critical Radio Systems, Inc., Lynchburg, Virginia	18	35
ComNet Ericsson Panther Transceiver, Portable; Panther 400P	Com-Net Ericsson Critical Radio Systems, Inc., Lynchburg, Virginia	19	37
ComNet Ericsson Panther Transceiver, Portable; Panther 500P	Com-Net Ericsson Critical Radio Systems, Inc., Lynchburg, Virginia	20	39
ComNet Ericsson Panther Transceiver, Portable; Panther 600P	Com-Net Ericsson Critical Radio Systems, Inc., Lynchburg, Virginia	21	41
ComNet Ericsson Panther Transceiver, Portable; Panther 625P	Com-Net Ericsson Critical Radio Systems, Inc., Lynchburg, Virginia	22	43
ComNet Ericsson ProVoice™ MASTR™ III Base Station 800 MHz	Com-Net Ericsson Critical Radio Systems, Inc., Lynchburg, Virginia	24	47
ComNet Ericsson Repeater; MASTR III	Com-Net Ericsson Critical Radio Systems, Inc., Lynchburg, Virginia	14	27
ComNet Ericsson Repeater; Orion Transportable Repeater	Com-Net Ericsson Critical Radio Systems, Inc., Lynchburg, Virginia	16	31

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EFJohnson Auris Digital Base Station; RS-5611-VHF Dual Channel	EFJohnson/Transcrypt, Waseca, Minnesota	29	57
EFJohnson Auris Digital Repeater/Basestation; RS-5604 (Single Channel)/5614 (Dual Channel)–UHF	EFJohnson/Transcrypt, Waseca, Minnesota	30	59
EFJohnson Auris Digital Repeater; RS-5601-VHF Single Channel	EFJohnson/Transcrypt, Waseca, Minnesota	27	53
EFJohnson Auris Digital Repeater; RS-5611-VHF Dual Channel	EFJohnson/Transcrypt, Waseca, Minnesota	28	55
EFJohnson Auris Repeater; RS–5604 (Single Channel)/5614 (Dual Channel) - UHF	EFJohnson/Transcrypt, Waseca, Minnesota	31	61
EFJohnson Transceiver, Portable; 77xx-800 MHz	EFJohnson/Transcrypt, Waseca, Minnesota	32	63
EFJohnson Transceiver, Portable; 98xx-800 MHz	EFJohnson/Transcrypt, Waseca, Minnesota	33	65
EFJohnson Transceiver, Portable; 501x-VHF	EFJohnson/Transcrypt, Waseca, Minnesota	34	67
EFJohnson Transceiver, Portable; 504x-UHF	EFJohnson/Transcrypt, Waseca, Minnesota	35	69
EFJohnson Transceiver, Portable; 508x-800 MHz	EFJohnson/Transcrypt, Waseca, Minnesota	36	71
EFJohnson Transceiver; 531x-VHF	EFJohnson/Transcrypt, Waseca, Minnesota	37	73
EFJohnson Transceiver; 538x-800 MHz	EFJohnson/Transcrypt, Waseca, Minnesota	38	75
Icom UHF Mobile Transceiver; IC-F2020	ICOM America Inc., Bellevue, Washington	46	91
Icom UHF Mobile Transceiver; IC-F320S/IC-F420S	ICOM America Inc., Bellevue, Washington	48	95
Icom UHF Transceiver, Portable; IC-F4	ICOM America Inc., Bellevue, Washington	42	83
Icom UHF Transceiver, Portable; IC-F4S	ICOM America Inc., Bellevue, Washington	43	85

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Icom UHF Transceiver, Portable; IC-F4GT/IC-F4GTS	ICOM America Inc., Bellevue, Washington	44	87
Icom UHF Transceiver, Portable; IC-F40GS/IC-F40GT	ICOM America Inc., Bellevue, Washington	51	101
Icom UHF Transceiver, Portable; IC-F40LT Land Use IC-F40M/IC-F40LT Marine Version	ICOM America Inc., Bellevue, Washington	52	103
Icom VHF Mobile Transceiver; IC-F1020	ICOM America Inc., Bellevue, Washington	45	98
Icom VHF Mobile Transceiver; IC-F320/IC-F420	ICOM America Inc., Bellevue, Washington	47	93
Icom VHF Transceiver, Portable; IC-F3	ICOM America Inc., Bellevue, Washington	39	77
Icom VHF Transceiver, Portable; IC-F3S	ICOM America Inc., Bellevue, Washington	40	79
Icom VHF Transceiver, Portable; IC-F3GT/IC-F3GTS	ICOM America Inc., Bellevue, Washington	41	81
Icom VHF Transceiver, Portable; IC-F30GS/IC-F30GT	ICOM America Inc., Bellevue, Washington	49	97
Icom VHF Transceiver, Portable; IC-F30LT Land Use, IC-F30LT Marine Version	ICOM America Inc., Bellevue, Washington	50	99
Kenwood 800/900 MHz FM Transceiver; TK-480 and TK-80 NPSPAC	Kenwood Communications Corp., Long Beach, California	82	163
Kenwood 800/900 MHz FM Transceiver; TK-481	Kenwood Communications Corp., Long Beach, California	83	165
Kenwood Compact Synthesized FM Mobile Radio; TK-760G	Kenwood Communications Corp., Long Beach, California	59	117
Kenwood Compact Synthesized FM Mobile Radio; TK-860G	Kenwood Communications Corp., Long Beach, California	60	119
Kenwood Compact Synthesized FM Mobile Radio; TK-762G	Kenwood Communications Corp., Long Beach, California	61	121
Kenwood Compact Synthesized FM Mobile Radio; TK-862G	Kenwood Communications Corp., Long Beach, California	62	123
Kenwood Compact Synthesized FM Mobile Radio; TK-760H	Kenwood Communications Corp., Long Beach, California	63	125

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Kenwood Compact Synthesized FM Mobile Radio; TK-860H	Kenwood Communications Corp., Long Beach, California	64	127
Kenwood Compact Synthesized FM Mobile Radio; TK-762H	Kenwood Communications Corp., Long Beach, California	65	129
Kenwood Compact Synthesized FM Mobile Radio; TK-862H	Kenwood Communications Corp., Long Beach, California	66	131
Kenwood Public Safety Mobile FM Radios; TK-690H	Kenwood Communications Corp., Long Beach, California	67	133
Kenwood Public Safety Mobile FM Radios; TK-790	Kenwood Communications Corp., Long Beach, California	68	135
Kenwood Public Safety Mobile FM Radios; TK-790H	Kenwood Communications Corp., Long Beach, California	69	137
Kenwood Public Safety Mobile FM Radios; TK-890	Kenwood Communications Corp., Long Beach, California	70	139
Kenwood Public Safety Mobile FM Radios; TK-890H	Kenwood Communications Corp., Long Beach, California	71	141
Kenwood Synthesized FM Portable Radio; TK-260/G	Kenwood Communications Corp., Long Beach, California	55	109
Kenwood Synthesized FM Portable Radio; TK-270/G	Kenwood Communications Corp., Long Beach, California	56	111
Kenwood Synthesized FM Portable Radio; TK-360/G	Kenwood Communications Corp., Long Beach, California	57	113
Kenwood Synthesized FM Portable Radio; TK-370/G	Kenwood Communications Corp., Long Beach, California	58	115
Kenwood Synthesized FM Portable Radio/Trunked System; TK-280	Kenwood Communications Corp., Long Beach, California	80	159
Kenwood Synthesized FM Portable Radio/Trunked System; TK-380	Kenwood Communications Corp., Long Beach, California	81	161
Kenwood Transceiver, Portable; TK-2100	Kenwood Communications Corp., Long Beach, California	74	147
Kenwood Transceiver, Portable; TK-3100	Kenwood Communications Corp., Long Beach, California	75	149
Kenwood Transceiver, Portable; TK-3101	Kenwood Communications Corp., Long Beach, California	76	151
Kenwood Trunked Compact Mobile Radio; TK-980	Kenwood Communications Corp., Long Beach, California	85	169

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Kenwood Trunked Compact Mobile Radio; TK-981	Kenwood Communications Corp., Long Beach, California	86	171
Kenwood Trunked Mobile Radio; TK-980 NSPAC	Kenwood Communications Corp., Long Beach, California	79	157
Kenwood Trunked Portable Radios; TK-930HDK2 NSPAC	Kenwood Communications Corp., Long Beach, California	84	167
Kenwood UHF Fm Transceivers; TK-390	Kenwood Communications Corp., Long Beach, California	78	155
Kenwood UHF Repeater; TKR-820	Kenwood Communications Corp., Long Beach, California	89	177
Kenwood VHF Base Transceiver; TKB-720	Kenwood Communications Corp., Long Beach, California	87	173
Kenwood VHF Fm Transceivers; TK-290	Kenwood Communications Corp., Long Beach, California	77	153
Kenwood VHF/UHF Mobile Radio; TK-780	Kenwood Communications Corp., Long Beach, California	72	143
Kenwood VHF/UHF Mobile Radio; TK-880	Kenwood Communications Corp., Long Beach, California	73	145
Kenwood VHF/UHF Repeater; TKR-720	Kenwood Communications Corp., Long Beach, California	88	175
Maxon Scanning Transceiver; SM-2000 Series	Topaz 3, LLC, Kansas City, Missouri	139	277
Maxon Scanning Transceiver; SM-4000 Series	Topaz 3, LLC, Kansas City, Missouri	140	279
Maxon UHF Transceiver, Portable; SP-150U	Topaz 3, LLC, Kansas City, Missouri	145	289
Maxon VHF/UHF RF Link Module; SD-125	Topaz 3, LLC, Kansas City, Missouri	138	275
Maxon VHF/UHF Transceiver, Portable; SP-120	Topaz 3, LLC, Kansas City, Missouri	141	281
Maxon VHF/UHF Transceiver, Portable; SP-130/SP-140	Topaz 3, LLC, Kansas City, Missouri	142	283
Maxon VHF/UHF Transceiver, Portable; SP-200	Topaz 3, LLC, Kansas City, Missouri	143	285
Maxon VHF/UHF Transceiver, Portable; SP-300	Topaz 3, LLC, Kansas City, Missouri	144	287

Communication Equipment Name	*Manufacturer*	*ID #*	*Page E–#*
Modular Interconnect System, ACU-1000	JPS Communications, Inc., Raleigh, North Carolina	53	105
Motorola Astro Transceiver, Portable; Saber 1	Motorola USA, Schaumburg, Illinois	90	178
Motorola Astro Transceiver, Portable; Saber 2	Motorola USA, Schaumburg, Illinois	91	181
Motorola Astro Transceiver, Portable; Saber 3	Motorola USA, Schaumburg, Illinois	92	183
Motorola Astro Transceiver, Portable; XTS 3000 Model 1	Motorola USA, Schaumburg, Illinois	93	185
Motorola Astro Transceiver, Portable; XTS 3000 Model 2	Motorola USA, Schaumburg, Illinois	94	187
Motorola Astro Transceiver, Portable; XTS 3000 Model 3	Motorola USA, Schaumburg, Illinois	95	189
Motorola Astro Transceiver, Portable; XTS 3000R Series Models 1, 2, & 3	Motorola USA, Schaumburg, Illinois	96	191
Motorola Dual Mode Mobile; MCS 2000 Mobile Model II	Motorola USA, Schaumburg, Illinois	97	193
Motorola Dual Mode Mobile; MCS 2000 Mobile Model II	Motorola USA, Schaumburg, Illinois	98	195
Motorola Dual Mode Mobile; MCS 2000 Mobile Model III	Motorola USA, Schaumburg, Illinois	99	197
Motorola Portable Repeater; Portable Repeater 2	Motorola USA, Schaumburg, Illinois	117	233
Motorola Station/Repeater; QUANTAR	Motorola USA, Schaumburg, Illinois	115	229
Motorola Station/Repeater; QUANTRO	Motorola USA, Schaumburg, Illinois	116	231
Motorola Transceiver, Portable; VISAR	Motorola USA, Schaumburg, Illinois	105	209
Motorola Transceiver, Portable; HT 1000	Motorola USA, Schaumburg, Illinois	106	211
Motorola Transceiver, Portable; JT 1000	Motorola USA, Schaumburg, Illinois	107	213
Motorola Transceiver, Portable; MT 2000 VHF	Motorola USA, Schaumburg, Illinois	108	215

Communication Equipment Name	*Manufacturer*	*ID #*	*Page E–#*
Motorola Transceiver, Portable; MTS 2000 Model 1	Motorola USA, Schaumburg, Illinois	109	217
Motorola Transceiver, Portable; MTS 2000 Model 2	Motorola USA, Schaumburg, Illinois	110	219
Motorola Transceiver, Portable; MTS 2000 Model 3	Motorola USA, Schaumburg, Illinois	111	221
Motorola Transceiver; Astro Digital Spectra W3	Motorola USA, Schaumburg, Illinois	100	199
Motorola Transceiver; Astro Spectra W4	Motorola USA, Schaumburg, Illinois	101	201
Motorola Transceiver; Astro Spectra W5	Motorola USA, Schaumburg, Illinois	102	203
Motorola Transceiver; Astro Spectra W7	Motorola USA, Schaumburg, Illinois	103	205
Motorola Transceiver; Astro Spectra W9	Motorola USA, Schaumburg, Illinois	104	207
Motorola Trunked Portable Radio; MTX 8000 Model B3	Motorola USA, Schaumburg, Illinois	112	223
Motorola Trunked Portable Radio; MTX 8000 Model B5	Motorola USA, Schaumburg, Illinois	113	225
Motorola Trunked Portable Radio; MTX 8000/9000 Model B7	Motorola USA, Schaumburg, Illinois	114	227
Racal Transceiver, Portable; 20 Meter MSHR	Racal Communications Inc., Rockville, Maryland	120	239
Racal Transceiver, Portable; Racal 25	Racal Communications Inc., Rockville, Maryland	121	241
Racal Transceiver, Portable; MBITR (Multiband Inter/Intra Team Radio)	Racal Communications Inc., Rockville, Maryland	118	235
Racal Transceiver, Portable; MSHR (Miniature Secure Handheld Radio)	Racal Communications Inc., Rockville, Maryland	119	237
Relm Mobile Radio; 256NB	Relm Communication, West Melbourne, Florida	132	263
Relm Mobile Radios; SMV2516	Relm Communication, West Melbourne, Florida	136	271
Relm Mobile Radios; SMV4016	Relm Communication, West Melbourne, Florida	137	273

Communication Equipment Name	*Manufacturer*	*ID #*	*Page E–#*
Relm Portable Radios; MPU08 (UHF)	Relm Communication, West Melbourne, Florida	133	265
Relm Portable Radios; MPU32 (UHF)	Relm Communication, West Melbourne, Florida	134	267
Relm Portable Radios; MPV32 (VHF)	Relm Communication, West Melbourne, Florida	135	269
Transportable Radio Interconnect System, TRP-1000	JPS Communications, Inc., Raleigh, North Carolina	54	106
Vertex Dual Band (VHF & UHF) Transceiver, Portable; FTH-2070	Yaesu/Vertex-Standard, Cerritos, California	146	291
Vertex FTL Series; FTL-1011 (VHF LowBand)	Yaesu/Vertex-Standard, Cerritos, California	147	293
Vertex FTL Series; FTL-1011H (VHF LowBand HiPower)	Yaesu/Vertex-Standard, Cerritos, California	148	295
Vertex FTL Series; FTL-2011 (VHF Highband)	Yaesu/Vertex-Standard, Cerritos, California	149	297
Vertex FTL Series; FTL-7011 (UHF)	Yaesu/Vertex-Standard, Cerritos, California	150	299
Vertex GX4800UT Mobile Transceiver	Yaesu/Vertex-Standard, Cerritos, California	151	301
Vertex HX Series; HX120 UHF Portable	Yaesu/Vertex-Standard, Cerritos, California	155	309
Vertex HX Series; HX120 VHF Portable	Yaesu/Vertex-Standard, Cerritos, California	156	311
Vertex HX Series; HX140 VHF Portable	Yaesu/Vertex-Standard, Cerritos, California	157	313
Vertex HX Series; HX381 VHF Portable	Yaesu/Vertex-Standard, Cerritos, California	158	315
Vertex HX Series; HX381 UHF Portable	Yaesu/Vertex-Standard, Cerritos, California	159	317
Vertex HX Series; HX240 VHF Portable	Yaesu/Vertex-Standard, Cerritos, California	160	319
Vertex HX Series; HX240 UHF Portable	Yaesu/Vertex-Standard, Cerritos, California	161	321
Vertex HX Series; HX482UT UHF Portable	Yaesu/Vertex-Standard, Cerritos, California	162	323

Communication Equipment Name	*Manufacturer*	*ID #*	*Page E–#*
Vertex HX Series; HX580 Dual Protocol Hand Held	Yaesu/Vertex-Standard, Cerritos, California	163	324
Vertex Repeater or Base Station; VXR-7000 (VHF)	Yaesu/Vertex-Standard, Cerritos, California	181	361
Vertex Repeaters or Base Station; VXR-5000 (UHF)	Yaesu/Vertex-Standard, Cerritos, California	180	359
Vertex Repeaters; VXR-1000 (VHF)	Yaesu/Vertex-Standard, Cerritos, California	177	353
Vertex Repeaters; VXR-1000 (UHF)	Yaesu/Vertex-Standard, Cerritos, California	178	355
Vertex Repeaters; VXR-5000 (VHF)	Yaesu/Vertex-Standard, Cerritos, California	179	357
Vertex VX Series; VX-10V (VHF Model)	Yaesu/Vertex-Standard, Cerritos, California	152	303
Vertex VX Series; VX-10U (UHF Model)	Yaesu/Vertex-Standard, Cerritos, California	153	305
Vertex VX Series; VX-210V (VHF Model)	Yaesu/Vertex-Standard, Cerritos, California	164	327
Vertex VX Series; VX-210U (UHF Model)	Yaesu/Vertex-Standard, Cerritos, California	165	329
Vertex VX Series; VX-400V (VHF Model)	Yaesu/Vertex-Standard, Cerritos, California	166	331
Vertex VX Series; VX-400U (UHF Model)	Yaesu/Vertex-Standard, Cerritos, California	167	333
Vertex VX Series; VX-500	Yaesu/Vertex-Standard, Cerritos, California	168	335
Vertex VX Series; VX-510LX (Low Band VHF)	Yaesu/Vertex-Standard, Cerritos, California	169	337
Vertex VX Series; VX-510V (VHF Model)	Yaesu/Vertex-Standard, Cerritos, California	170	339
Vertex VX Series; VX-510U (UHF Model)	Yaesu/Vertex-Standard, Cerritos, California	171	341
Vertex VX Series; VX-2000V Mobile Radio (VHF)	Yaesu/Vertex-Standard, Cerritos, California	172	343
Vertex VX Series; VX-2000U Mobile Radio (UHF)	Yaesu/Vertex-Standard, Cerritos, California	173	345

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Vertex VX Series; VX-3000L (VHF Lowband)	Yaesu/Vertex-Standard, Cerritos, California	174	347
Vertex VX Series; VX-3000V (VHF)	Yaesu/Vertex-Standard, Cerritos, California	175	349
Vertex VX Series; VX-3000U (UHF)	Yaesu/Vertex-Standard, Cerritos, California	176	351
Vertex VX Series; VX-300	Yaesu/Vertex-Standard, Cerritos, California	154	307

APPENDIX D—INDEX BY COMMUNICATION EQUIPMENT MANUFACTURER

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Manufacturer	*Communication Equipment Name*	*ID #*	*Page E–#*
Com-Net Ericsson Critical Radio Systems, Inc., Lynchburg, Virginia	ComNet Ericsson ProVoice™ MASTR™ III Base Station 800 MHz	24	47
Com-Net Ericsson Critical Radio Systems, Inc., Lynchburg, Virginia	ComNet Ericsson ProVoice™ Orion™ Mobile 800 MHz	25	49
Com-Net Ericsson Critical Radio Systems, Inc., Lynchburg, Virginia	ComNet Ericsson EDACS™ LPE-200™ Portable 800 MHz, 900 MHz	5	9
Com-Net Ericsson Critical Radio Systems, Inc., Lynchburg, Virginia	ComNet Ericsson EDACS™ M-RK™ Aegis™ Portable VHF, UHF, 800 MHz	6	11
Com-Net Ericsson Critical Radio Systems, Inc., Lynchburg, Virginia	ComNet Ericsson EDACS™ M-RK™ Aegis™ Portable VHF, UHF, 800 MHz	7	13
Com-Net Ericsson Critical Radio Systems, Inc., Lynchburg, Virginia	ComNet Ericsson EDACS™ M-RK™ Aegis™ SCAN Portable VHF, UHF, 800 MHz	8	15
Com-Net Ericsson Critical Radio Systems, Inc., Lynchburg, Virginia	ComNet Ericsson M-RK™ Analog Portable, M-RK II	12	23
Com-Net Ericsson Critical Radio Systems, Inc., Lynchburg, Virginia	ComNet Ericsson Jaguar™ 700P, 800 MHz	9	17
EFJohnson/Transcrypt, Waseca, Minnesota	EFJohnson Auris Analog Base Station; RS-5601-VHF Single Channel	26	51
EFJohnson/Transcrypt, Waseca, Minnesota	EFJohnson Auris Digital Repeater; RS-5601-VHF Single Channel	27	53
EFJohnson/Transcrypt, Waseca, Minnesota	EFJohnson Auris Digital Repeater; RS-5611-VHF Dual Channel	28	55
EFJohnson/Transcrypt, Waseca, Minnesota	EFJohnson Auris Digital Base Station; RS-5611-VHF Dual Channel	29	57
EFJohnson/Transcrypt, Waseca, Minnesota	EFJohnson Auris Digital Repeater/ Basestation; RS-5604 (Single Channel)/ 5614 (Dual Channel)-UHF	30	59
EFJohnson/Transcrypt, Waseca, Minnesota	EFJohnson Auris Repeater; RS-5604 (Single Channel)/5614 (Dual Channel)-UHF	31	61
EFJohnson/Transcrypt, Waseca, Minnesota	EFJohnson Transceiver, Portable; 77xx-800 MHz	32	63
EFJohnson/Transcrypt, Waseca, Minnesota	EFJohnson Transceiver, Portable; 98xx-800 MHz	33	65

Manufacturer	*Communication Equipment Name*	*ID #*	*Page E–#*
EFJohnson/Transcrypt, Waseca, Minnesota	EFJohnson Transceiver, Portable; 501x-VHF	34	67
EFJohnson/Transcrypt, Waseca, Minnesota	EFJohnson Transceiver, Portable; 504x-UHF	35	69
EFJohnson/Transcrypt, Waseca, Minnesota	EFJohnson Transceiver, Portable; 508x-800 MHz	36	71
EFJohnson/Transcrypt, Waseca, Minnesota	EFJohnson Transceiver; 531x-VHF	37	73
EFJohnson/Transcrypt, Waseca, Minnesota	EFJohnson Transceiver; 538x-800 MHz	38	75
ICOM America Inc., Bellevue, Washington	Icom VHF Transceiver, Portable; IC-F3	39	77
ICOM America Inc., Bellevue, Washington	Icom VHF Transceiver, Portable; IC-F3S	40	79
ICOM America Inc., Bellevue, Washington	Icom VHF Transceiver, Portable; IC-F3GT/IC-F3GTS	41	81
ICOM America Inc., Bellevue, Washington	Icom UHF Transceiver, Portable; IC-F4	42	83
ICOM America Inc., Bellevue, Washington	Icom UHF Transceiver, Portable; IC-F4S	43	85
ICOM America Inc., Bellevue, Washington	Icom UHF Transceiver, Portable; IC-F4GT/IC-F4GTS	44	87
ICOM America Inc., Bellevue, Washington	Icom VHF Mobile Transceiver; IC-F1020	45	98
ICOM America Inc., Bellevue, Washington	Icom UHF Mobile Transceiver; IC-F2020	46	91
ICOM America Inc., Bellevue, Washington	Icom VHF Mobile Transceiver; IC-F320/IC-F420	47	93
ICOM America Inc., Bellevue, Washington	Icom UHF Mobile Transceiver; IC-F320S/IC-F420S	48	95
ICOM America Inc., Bellevue, Washington	Icom VHF Transceiver, Portable; IC-F30GS/IC-F30GT	49	97
ICOM America Inc., Bellevue, Washington	Icom VHF Transceiver, Portable; IC-F30LT Land Use IC-F30LT Marine Version	50	99

Manufacturer	*Communication Equipment Name*	*ID #*	*Page E–#*
ICOM America Inc., Bellevue, Washington	Icom UHF Transceiver, Portable; IC-F40GS/IC-F40GT	51	101
ICOM America Inc., Bellevue, Washington	Icom UHF Transceiver, Portable; IC-F40LT Land Use IC-F40M/IC-F40LT Marine Version	52	103
JPS Communications, Inc., Raleigh, North Carolina	Modular Interconnect System, ACU-1000	53	105
JPS Communications, Inc., Raleigh, North Carolina	Transportable Radio Interconnect System, TRP-1000	54	106
Kenwood Communications Corp., Long Beach, California	Kenwood Synthesized FM Portable Radio; TK-260/G	55	109
Kenwood Communications Corp., Long Beach, California	Kenwood Synthesized FM Portable Radio; TK-270/G	56	111
Kenwood Communications Corp., Long Beach, California	Kenwood Synthesized FM Portable Radio; TK-360/G	57	113
Kenwood Communications Corp., Long Beach, California	Kenwood Synthesized FM Portable Radio; TK-370/G	58	115
Kenwood Communications Corp., Long Beach, California	Kenwood Compact Synthesized FM Mobile Radio; TK-760G	59	117
Kenwood Communications Corp., Long Beach, California	Kenwood Compact Synthesized FM Mobile Radio; TK-860G	60	119
Kenwood Communications Corp., Long Beach, California	Kenwood Compact Synthesized FM Mobile Radio; TK-762G	61	121
Kenwood Communications Corp., Long Beach, California	Kenwood Compact Synthesized FM Mobile Radio; TK-862G	62	123
Kenwood Communications Corp., Long Beach, California	Kenwood Compact Synthesized FM Mobile Radio; TK-760H	63	125
Kenwood Communications Corp., Long Beach, California	Kenwood Compact Synthesized FM Mobile Radio; TK-860H	64	127
Kenwood Communications Corp., Long Beach, California	Kenwood Compact Synthesized FM Mobile Radio; TK-762H	65	129
Kenwood Communications Corp., Long Beach, California	Kenwood Compact Synthesized FM Mobile Radio; TK-862H	66	131
Kenwood Communications Corp., Long Beach, California	Kenwood Public Safety Mobile FM Radios; TK-690H	67	133

Kenwood Communications Corp., Long Beach, California	Kenwood Public Safety Mobile FM Radios; TK-790	68	135
Kenwood Communications Corp., Long Beach, California	Kenwood Public Safety Mobile FM Radios; TK-790H	69	137
Kenwood Communications Corp., Long Beach, California	Kenwood Public Safety Mobile FM Radios; TK-890	70	139
Kenwood Communications Corp., Long Beach, California	Kenwood Public Safety Mobile FM Radios; TK-890H	71	141
Kenwood Communications Corp., Long Beach, California	Kenwood VHF/UHF Mobile Radio; TK-780	72	143
Kenwood Communications Corp., Long Beach, California	Kenwood VHF/UHF Mobile Radio; TK-880	73	145
Kenwood Communications Corp., Long Beach, California	Kenwood Transceiver, Portable; TK-2100	74	147
Kenwood Communications Corp., Long Beach, California	Kenwood Transceiver, Portable; TK-3100	75	149
Kenwood Communications Corp., Long Beach, California	Kenwood Transceiver, Portable; TK-3101	76	151
Kenwood Communications Corp., Long Beach, California	Kenwood VHF Fm Transceivers; TK-290	77	153
Kenwood Communications Corp., Long Beach, California	Kenwood UHF Fm Transceivers; TK-390	78	155
Kenwood Communications Corp., Long Beach, California	Kenwood Trunked Mobile Radio; TK-980 NSPAC	79	157
Kenwood Communications Corp., Long Beach, California	Kenwood Synthesized FM Portable Radio/Trunked System; TK-280	80	159
Kenwood Communications Corp., Long Beach, California	Kenwood Synthesized FM Portable Radio/Trunked System; TK-380	81	161
Kenwood Communications Corp., Long Beach, California	Kenwood 800/900 MHz FM Transceiver; TK-480 and TK-480 NPSPAC	82	163
Kenwood Communications Corp., Long Beach, California	Kenwood 800/900 MHz FM Transceiver; TK-481	83	165
Kenwood Communications Corp., Long Beach, California	Kenwood Trunked Portable Radios; TK-930HDK2 NSPAC	84	167

Manufacturer	*Communication Equipment Name*	*ID #*	*Page E–#*
Kenwood Communications Corp., Long Beach, California	Kenwood Trunked Compact Mobile Radio; TK-980	85	169
Kenwood Communications Corp., Long Beach, California	Kenwood Trunked Compact Mobile Radio; TK-981	86	171
Kenwood Communications Corp., Long Beach, California	Kenwood VHF Base Transceiver; TKB-720	87	173
Kenwood Communications Corp., Long Beach, California	Kenwood VHF/UHF Repeater; TKR-720	88	175
Kenwood Communications Corp., Long Beach, California	Kenwood UHF Repeater; TKR-820	89	177
Motorola USA, Schaumburg, Illinois	Motorola Transceiver; Astro Digital Spectra W3	100	199
Motorola USA, Schaumburg, Illinois	Motorola Transceiver; Astro Spectra W4	101	201
Motorola USA, Schaumburg, Illinois	Motorola Transceiver; Astro Spectra W5	102	203
Motorola USA, Schaumburg, Illinois	Motorola Transceiver; Astro Spectra W7	103	205
Motorola USA, Schaumburg, Illinois	Motorola Transceiver; Astro Spectra W9	104	207
Motorola USA, Schaumburg, Illinois	Motorola Transceiver, Portable; VISAR	105	209
Motorola USA, Schaumburg, Illinois	Motorola Transceiver, Portable; HT 1000	106	211
Motorola USA, Schaumburg, Illinois	Motorola Transceiver, Portable; JT 1000	107	213
Motorola USA, Schaumburg, Illinois	Motorola Transceiver, Portable; MT 2000 VHF	108	215
Motorola USA, Schaumburg, Illinois	Motorola Transceiver, Portable; MTS 2000 Model 1	109	217
Motorola USA, Schaumburg, Illinois	Motorola Transceiver, Portable; MTS 2000 Model 2	110	219
Motorola USA, Schaumburg, Illinois	Motorola Transceiver, Portable; MTS 2000 Model 3	111	221
Motorola USA, Schaumburg, Illinois	Motorola Trunked Portable Radio; MTX 8000 Model B3	112	223

Motorola USA, Schaumburg, Illinois	Motorola Trunked Portable Radio; MTX 8000 Model B5	113	225
Motorola USA, Schaumburg, Illinois	Motorola Trunked Portable Radio; MTX 8000/9000 Model B7	114	227
Motorola USA, Schaumburg, Illinois	Motorola Station/Repeater; QUANTAR	115	229
Motorola USA, Schaumburg, Illinois	Motorola Station/Repeater; QUANTRO	116	231
Motorola USA, Schaumburg, Illinois	Motorola Portable Repeater; Portable Repeater 2	117	233
Motorola USA, Schaumburg, Illinois	Motorola Astro Transceiver, Portable; Saber 1	90	178
Motorola USA, Schaumburg, Illinois	Motorola Astro Transceiver, Portable; Saber 2	91	181
Motorola USA, Schaumburg, Illinois	Motorola Astro Transceiver, Portable; Saber 3	92	183
Motorola USA, Schaumburg, Illinois	Motorola Astro Transceiver, Portable; XTS 3000 Model 1	93	185
Motorola USA, Schaumburg, Illinois	Motorola Astro Transceiver, Portable; XTS 3000 Model 2	94	187
Motorola USA, Schaumburg, Illinois	Motorola Astro Transceiver, Portable; XTS 3000 Model 3	95	189
Motorola USA, Schaumburg, Illinois	Motorola Astro Transceiver, Portable; XTS 3000R Series Models 1, 2, & 3	96	191
Motorola USA, Schaumburg, Illinois	Motorola Dual Mode Mobile; MCS 2000 Mobile Model II	97	193
Motorola USA, Schaumburg, Illinois	Motorola Dual Mode Mobile; MCS 2000 Mobile Model II	98	195
Motorola USA, Schaumburg, Illinois	Motorola Dual Mode Mobile; MCS 2000 Mobile Model III	99	197
Racal Communications Inc., Rockville, Maryland	Racal Transceiver, Portable; MBITR (Multiband Inter/Intra Team Radio)	118	235
Racal Communications Inc., Rockville, Maryland	Racal Transceiver, Portable; MSHR (Miniature Secure Handheld Radio)	119	237
Racal Communications Inc., Rockville, Maryland	Racal Transceiver, Portable; 20 Meter MSHR	120	239

Manufacturer	*Communication Equipment Name*	*ID #*	*Page E–#*
Racal Communications Inc., Rockville, Maryland	Racal Transceiver, Portable; Racal 25	121	241
Relm Communication, West Melbourne, Florida	BK Base Station; EBU Series	122	243
Relm Communication, West Melbourne, Florida	BK Radio FM Transceiver; EMH 599 2X	123	245
Relm Communication, West Melbourne, Florida	BK Synthesized FM Mobile Radio; EMV	124	247
Relm Communication, West Melbourne, Florida	BK Synthesized FM E Series DES EPH 599, EPU 499 and EPV 499 Models	125	249
Relm Communication, West Melbourne, Florida	BK Synthesized FM Portable Radio; E Series, EPH 51 and 52 Models	126	251
Relm Communication, West Melbourne, Florida	BK Synthesized FM Portable Radio; E Series, EPI 510 Models	127	253
Relm Communication, West Melbourne, Florida	BK Synthesized FM Portable Radio; E Series, EPU and EPV 414 and 499 Models	128	255
Relm Communication, West Melbourne, Florida	BK Repeater; ERU Series	129	257
Relm Communication, West Melbourne, Florida	BK Radio FM Transceiver, Portable; G Series, GPH Models	130	259
Relm Communication, West Melbourne, Florida	BK Radio Airborne Transceiver; KFM 985	131	261
Relm Communication, West Melbourne, Florida	Relm Mobile Radio; 256NB	132	263
Relm Communication, West Melbourne, Florida	Relm Portable Radios; MPU08 (UHF)	133	265
Relm Communication, West Melbourne, Florida	Relm Portable Radios; MPU32 (UHF)	134	267
Relm Communication, West Melbourne, Florida	Relm Portable Radios; MPV32 (VHF)	135	269
Relm Communication, West Melbourne, Florida	Relm Mobile Radios; SMV2516	136	271
Relm Communication, West Melbourne, Florida	Relm Mobile Radios; SMV4016	137	273
Topaz 3, LLC, Kansas City, Missouri	Maxon VHF/UHF RF Link Module; SD-25	138	275

Manufacturer	*Communication Equipment Name*	*ID #*	*Page E–#*
Topaz 3, LLC, Kansas City, Missouri	Maxon Scanning Transceiver; SM-2000 Series	139	277
Topaz 3, LLC, Kansas City, Missouri	Maxon Scanning Transceiver; SM-4000 Series	140	279
Topaz 3, LLC, Kansas City, Missouri	Maxon VHF/UHF Transceiver, Portable; SP-120	141	281
Topaz 3, LLC, Kansas City, Missouri	Maxon VHF/UHF Transceiver, Portable; SP-130/SP-140	142	283
Topaz 3, LLC, Kansas City, Missouri	Maxon VHF/UHF Transceiver, Portable; SP-200	143	285
Topaz 3, LLC, Kansas City, Missouri	Maxon VHF/UHF Transceiver, Portable; SP-300	144	287
Topaz 3, LLC, Kansas City, Missouri	Maxon UHF Transceiver, Portable; SP-150U	145	289
Yaesu/Vertex-Standard, Cerritos, California	Vertex Dual Band (VHF & UHF) Transceiver, Portable; FTH-2070	146	291
Yaesu/Vertex-Standard, Cerritos, California	Vertex FTL Series; FTL-1011 (VHF LowBand)	147	293
Yaesu/Vertex-Standard, Cerritos, California	Vertex FTL Series; FTL-1011H (VHF LowBand HiPower)	148	295
Yaesu/Vertex-Standard, Cerritos, California	Vertex FTL Series; FTL-2011 (VHF Highband)	149	297
Yaesu/Vertex-Standard, Cerritos, California	Vertex FTL Series; FTL-7011 (UHF)	150	299
Yaesu/Vertex-Standard, Cerritos, California	Vertex GX4800UT Mobile Transceiver	151	301
Yaesu/Vertex-Standard, Cerritos, California	Vertex VX Series; VX-10V (VHF Model)	152	303
Yaesu/Vertex-Standard, Cerritos, California	Vertex VX Series; VX-10U (UHF Model)	153	305
Yaesu/Vertex-Standard, Cerritos, California	Vertex VX Series; VX-300	154	307
Yaesu/Vertex-Standard, Cerritos, California	Vertex HX Series; HX120 UHF Portable	155	309
Yaesu/Vertex-Standard, Cerritos, California	Vertex HX Series; HX120 VHF Portable	156	311

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Yaesu/Vertex-Standard, Cerritos, California	Vertex HX Series; HX140 VHF Portable	157	313
Yaesu/Vertex-Standard, Cerritos, California	Vertex HX Series; HX381 VHF Portable	158	315
Yaesu/Vertex-Standard, Cerritos, California	Vertex HX Series; HX381 UHF Portable	159	317
Yaesu/Vertex-Standard, Cerritos, California	Vertex HX Series; HX240 VHF Portable	160	319
Yaesu/Vertex-Standard, Cerritos, California	Vertex HX Series; HX240 UHF Portable	161	321
Yaesu/Vertex-Standard, Cerritos, California	Vertex HX Series; HX482UT UHF Portable	162	323
Yaesu/Vertex-Standard, Cerritos, California	Vertex HX Series; HX580 Dual Protocol Hand Held	163	324
Yaesu/Vertex-Standard, Cerritos, California	Vertex VX Series; VX-210V (VHF Model)	164	327
Yaesu/Vertex-Standard, Cerritos, California	Vertex VX Series; VX-210U (UHF Model)	165	329
Yaesu/Vertex-Standard, Cerritos, California	Vertex VX Series; VX-400V (VHF Model)	166	331
Yaesu/Vertex-Standard, Cerritos, California	Vertex VX Series; VX-400U (UHF Model)	167	333
Yaesu/Vertex-Standard, Cerritos, California	Vertex VX Series; VX-500	168	335
Yaesu/Vertex-Standard, Cerritos, California	Vertex VX Series; VX-510LX (Low Band VHF)	169	337
Yaesu/Vertex-Standard, Cerritos, California	Vertex VX Series; VX-510V (VHF Model)	170	339
Yaesu/Vertex-Standard, Cerritos, California	Vertex VX Series; VX-510U (UHF Model)	171	341
Yaesu/Vertex-Standard, Cerritos, California	Vertex VX Series; VX-2000V Mobile Radio (VHF)	172	343
Yaesu/Vertex-Standard, Cerritos, California	Vertex VX Series; VX-2000U Mobile Radio (UHF)	173	345

Manufacturer	*Communication Equipment Name*	*ID #*	*Page E–#*
Yaesu/Vertex-Standard, Cerritos, California	Vertex VX Series; VX-3000L (VHF Lowband)	174	347
Yaesu/Vertex-Standard, Cerritos, California	Vertex VX Series; VX-3000V (VHF)	175	349
Yaesu/Vertex-Standard, Cerritos, California	Vertex VX Series; VX-3000U (UHF)	176	351
Yaesu/Vertex-Standard, Cerritos, California	Vertex Repeaters; VXR-1000 (VHF)	177	353
Yaesu/Vertex-Standard, Cerritos, California	Vertex Repeaters; VXR-1000 (UHF)	178	355
Yaesu/Vertex-Standard, Cerritos, California	Vertex Repeaters; VXR-5000 (VHF)	179	357
Yaesu/Vertex-Standard, Cerritos, California	Vertex Repeaters or Base Station; VXR-5000 (UHF)	180	359
Yaesu/Vertex-Standard, Cerritos, California	Vertex Repeater or Base Station; VXR-7000 (VHF)	181	361

APPENDIX E—COMMUNICATION EQUIPMENT DATA SHEETS

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